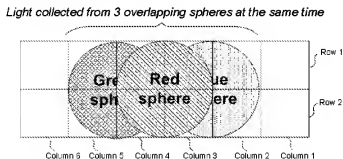


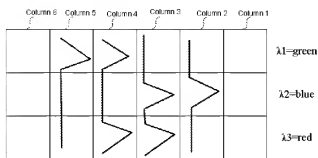


Indeed, blurred and overlapping two-dimensional imagery is a known limitation when using a prism to disperse light for two-dimensional imaging. If a detector is configured to determine spectral intensity (with one axis of the detector being dedicated to spectral intensity, and the other axis being dedicated to spatial information) or a one-dimensional spectrally dispersed image (with one axis of the detector being dedicated to spectral dispersion and the other axis being dedicated to spatial information), as opposed to acquiring two-dimensional images, this characteristic of a prism is not a drawback. However, if one wishes to obtain non-overlapping spectrally dispersed *two-dimensional* images using a prism, the blurring effect of the prism is a nuisance. In the specification as filed, one disclosed embodiment employs a prism, and post image acquisition processing (deconvolution) is required to address this issue. As amended, the pending claims are directed to disclosed embodiments where dichroic filters are employed instead of a prism, such that the post image acquisition processing (deconvolution) is NOT required. If the orientation of each dichroic filter is carefully controlled, one can ensure that the different spectral images appear on different regions of the detector. That aspect of the invention is not disclosed by Kain or Stern.

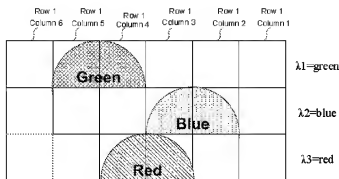
It may be helpful to consider how a detector/optical system would respond to three different color spheres that overlap one another (this can be considered to be a single probe including three different optical signaling components):



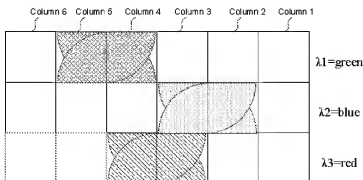
When a prism is used simply to disperse the wavelengths and record intensity (i.e., a non-imaging detector), a detector would acquire the following:



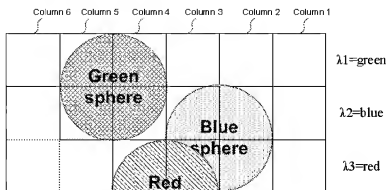
When a prism is used to disperse the wavelengths along one axis and the other axis is used for spatial information (i.e., single line scanning; a one-dimensional image), a detector would acquire the following:



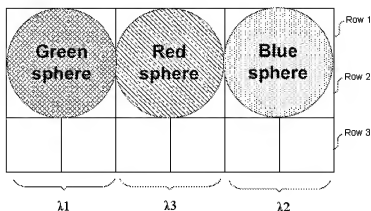
When a prism is used to disperse the light, and the detector is configured such that one axis attempts to preserve spatial information *and* to provide wavelength information, and the other axis is used for spatial information (i.e., attempting to combine two-dimension imaging with spectral dispersion), there are several possibilities, depending on how the detector is configured to use the same axis for both spatial information and wavelength information. In a first possibility, columns are preserved and rows are combined.



In a second possibility, columns are preserved and rows are allowed to disperse downward into the next row of the detector.



In contrast, applicants filter stack configurations (i.e., FIGURES 14 and 18) enable complete two-dimensional images to be simultaneously displayed on one detector without overlap, as shown below:



The artisan of ordinary skill in the art of optics will readily recognize that Kain's apparatus cannot achieve three non-overlapping two-dimensional images of spheres where the sample is three overlapping spheres of different colors, simply because the dispersion element disclosed by Kain is not equivalent to applicants' dispersion element, which is specifically configured to be positioned such that light exits the different portions of the dispersion element at the angles required to prevent overlap of the different spectral images on the detector. Kain and Stern simply do not teach or suggest such a dispersion element; thus the combination of Kain and Stern does not achieve an equivalent.

For the reasons discussed above, each independent claim (as amended) distinguishes over the cited art. Clearly, dependent claims are patentable for at least the same reasons as the claims from

1 which they depend. Accordingly, the rejection of Claims 34, 35, 37-40, 42-44, 46, 49-51, 54, 56-58,  
2 and 60-61 under 35 U.S.C. § 103(a) as being unpatentable over Stern in view of Kain should be  
3 withdrawn.

4 The Examiner is thus requested to pass the present application to issue in view of the remarks  
5 submitted above. If there are any questions that might be addressed by a further telephone interview,  
6 the Examiner is invited to telephone the undersigned attorney, at the number listed below.

7  
8 Respectfully submitted,

9  
10  
11 /mike king/  
12 Michael C. King  
13 Registration No. 44,832

14 MCK/RMA:bmd  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30